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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/25685**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : G01N 33/543

US CL : 436/518

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 436/518, 523, 524, 525, 526, 527, 528, 535, 546, 164, 172; 435/4, 7.1, 283.1, 286.1, 287.1, 287.3, 288.7, 289.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,207,369 A (WOHLSTADTER et al.) 27 March 2001, col. 11, line 60 - col. 12, line 65, col. 14, lines 45-52, col. 15, line 39-63, col. 18, lines 55-65, col. 27, lines 41-55, col. 57, lines 25-64, col. 59, lines 35-61, col. 60, lines 1-22, and 54-62.	1-50
A	US 6,017,496 A (NOVA et al.) 25 January 2000.	1-50
A	US 5,491,097 A (RIBI et al.) 13 February 1996.	1-50

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"g" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"p" document published prior to the international filing date but later than the priority date claimed	

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(54) Title: SUBSTRATES FOR ISOLATING, REACTING AND MICROSCOPICALLY ANALYZING MATERIALS

(57) Abstract: An immobilizing device for biological material comprises a rigid support (12) carrying a substrate layer (20, 20') of polymer having biological immobilizing properties, e.g. for amino and nucleic acids. Substantially solid ultra-thin substrate layers (20') having a thickness less than about 5 micron, preferably between about 0.1 and 0.5 micron, and micro-porous, ultra-thin substrate layers (20') having a thickness less than about 5 micron, preferably less than 3 micron, 2 or 1 micron are shown, which may be segmented by isolating moats M. The substrate layer is on a microscope slide (302), round disc (122), bio-cassette, at the bottom of a well of a multiwell plate, and as a coating inside a tube. Fluorescence or luminescence intensity and geometric calibration spots (420) are shown. Reading is enhanced by the intensity calibration spots (420) to enable normalization of readings under uneven illumination conditions, as when reading by dark field, side illumination mode. The reference spots are shown being printed simultaneously with printing an array of biological spots or with the same equipment. Methods of forming layers of the device include controlled drawing from a bath of coating composition and drying, and spinning of C-D shaped substrates. Post-forming treatment is shown by corona treatment and radiation. Adherent metal oxides (14), silica-based materials and other materials are used to unite layers of the composite. In multiwell plates the oxide promotes joining of a bottom plate (95, 95') and upper, well-defining structure (94) of dissimilar material. The oxides (14) also provide beneficial opacity to prevent light entering the glass support, for applying potential to the substrate, etc.

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